REMARKS

As a preliminary matter, Applicants note that the outstanding Office Action (Paper No. 14) indicates on the Office Action Summary (item 2a) that the outstanding Action is Final, but also on page 2 that the finality of the previous Office Action has been withdrawn pursuant to the Request for Continued Examination ("RCE") filed April 24, 2003. It is unclear to Applicants whether the Office Action Summary correctly indicates the status of the Application. Attempts to reach the Examiner to clarify this discrepancy were not successful.

Accordingly, in the event that the Office Action Summary correctly reflects the status of this Application, namely, that the claims are under final rejection, Applicants respectfully request that the Patent Office consider this Amendment to additionally as an RCE, and charge all appropriate fees to Deposit Account No. 07-2069. A duplicate copy of this paper is enclosed.

Alternatively, if the Office Action summary is incorrect, and the claims of this Application are not under final rejection, the Patent Office is respectfully requested to ignore this conditional RCE, and treat this paper as an Amendment only, without charging any RCE fees to Deposit Account No. 07-2069.

Claims 1-6, 7-9, 14, and 17 stand rejected under 35 U.S.C. 102(e) as being anticipated by Noguchi et al. (U.S. 5,862,022). Applicants respectfully traverse this rejection as follows.

With respect to claim 1 (and its dependent claims 2-6) of the present invention, Applicants respectfully traverse because the cited reference does not disclose (or suggest) a magnetic sensor with a barrier layer that has region of greater thickness around a region of lesser thickness, as in claim 1 of the present invention, as amended.

Applicants maintain and incorporate by reference herein those arguments previously advanced on pages 7 through 13 of Amendment B, filed on April 24, 2003. Applicants respectfully request that the Examiner reconsider those arguments and withdraw this Section 102 rejection. Additionally, although Applicants do not agree that the Examiner's asserted interpretation of the claims of the present invention is appropriate, or that the claims of the present invention read upon the Noguchi reference, Applicants have amended independent claim 1 (as well as independent claim 7) in order to expedite prosecution. In light of this Amendment, Applicants respectfully request that the Examiner consider the following new arguments, and comments expanding upon the previous arguments.

As previously discussed, Noguchi shows a magnetic head with a ferromagnetic tunnel junction. The Examiner continues to assert that the region D1 of Noguchi's junction (Fig. 46) is analogous to the first region (of lesser thickness) in the present invention. However, even if this analogy were correct, Noguchi's region D1 still would not represent or read upon the present invention.

Noguchi clearly shows that the region of different thickness represented by D1 is located along one edge of the air bearing surface a1 of the magnetic head 1. (See Figs. 23-24, 46-47). The portion of what the Examiner asserts to be the barrier layer in Noguchi (combination of insulating films 210 and 213) outside of D1 may have a greater thickness than D1, but this portion is only located along one side of the D1 region of lesser thickness. In other words, Noguchi fails to show that any of this greater thickness portion is *around* the lesser thickness D1 region.

In contrast, claim 1 of the present invention has been amended to clarify that the barrier layer has a second region of greater thickness around the first region. Noguchi simply does not show, or even suggest, such features. Nothing of the thicker portion of the combination layer 210+213 can be accurately described as being "around" the region D1. At most, this thicker portion could only be described as being "by" the region D1, which is different. Accordingly, for all of the foregoing reasons, the Section 102 rejection of claim 1, and its dependent claims, based on Noguchi is respectfully traversed.

With respect to claim 7 (and its dependent claims 8-9, 14, and 17) of the present invention, Applicants respectfully traverse because the cited reference does not disclose (or suggest) a magnetic head having an end portion of a free layer being connected to a high permeability shield layer, as in claim 7 of the present invention, as amended.

The rejection of claim 7 of the present invention based on Noguchi is based upon an erroneous assertion by the Examiner. The Examiner incorrectly asserts that

Noguchi's first electrode film 22 is a member of high permeability, and therefore analogous the high permeability shield layers of the present invention. Noguchi, however, teaches the opposite. Noguchi expressly teaches that the first electrode film 22 is made of a Ta/Cu/Ta material. (See col. 21, lines 7-9). Applicants submit that one skilled in the art is well apprised that a Ta/Cu/Ta material is diamagnetic, and therefore cannot be a material of high permeability.

Applicants further submit that, if anything, only the bottom magnetic shield film 51 of Noguchi (see Fig. 46) could have been appropriately compared to the high permeability shield layer of the present invention (element 212a in Fig. 17A of the present Application). Noguchi's shield film 51, however, is clearly shown to not be connected to the first ferromagnetic film 211 (Examiner's "free layer"), and particularly not to any end portion of the film 211. Because claim 7 clearly recites such features, the Section 102 rejection of claims 7-9, 14, and 17 is respectfully traversed for at least these reasons.

Additionally, and irrespective of the arguments above, claim 7 of the present invention has been further amended to clarify that the high permeability shield layers, discussed above, are formed at both sides of the ferromagnetic tunnel junction element. Applicants submit that, by this amendment, claim 7 is even further distinguished from the Noguchi reference, and in addition to those differences discussed above.

Claim 7-8, 11-12, and 15 again stand rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi in view of Gill (U.S. 6,108,177). Applicants respectfully traverse

for at least the reasons discussed above, and as follows. Neither reference, whether taken alone or in combination, teaches or suggests an end portion of the free layer extending and projecting from the ferromagnetic tunnel junction element, as well as connecting to a high permeability shield layer that is spaced from the tunnel junction element.

Noguchi, as discussed above, fails to teach or suggest any connection between the free layer and a high permeability shield layer. Gill teaches a free layer 210 connecting to a shield layer 212, but – contrary to the Examiner's assertion – with no spacing from the ferromagnetic tunnel junction element (layers 204, 206, 208, 210 collectively, as previously asserted by the Examiner in Paper No. 14). Fig. 9 of Gill clearly shows the shield layer 212 directly connected to the free layer 210 across the entirety of the layer. No reasonable reading of the Gill reference could conclude that an end portion of the shield layer is "spaced from" the ferromagnetic tunnel junction element.

Moreover, the Examiner has not properly identified any "end portion" of Gill's free layer 210 which both extends and projects from the tunnel junction element. Fig 10 of Gill clearly illustrates that one entire side of the free layer 210 (and therefore the tunnel junction element as a whole) contacts the shield layer 212, and thus no reasonable interpretation of Gill could also define this entire side of the tunnel junction element itself as either "projecting" or "extending" from the tunnel junction element. Applicants respectfully request that the Examiner give full and proper consideration to all of the recited claim language of the present invention.

Because of these clear deficiencies in both prior art references, there could be no suggestion to combine them to reach the present invention. Not only must every element of the present invention be taught or suggested by the prior art (which they are not), there must also be some teaching or suggestion within the prior art for the motivation to combine them. The Examiner has cited to no such motivation *within either reference*. The Examiner's only suggested rationale for the combination is that "a high magneto-resistive ratio can be achieved with good reproduction characteristics." (Page 5 of Paper No. 14). The Examiner, however, provides no citation to the prior art to support this rationale, or particularly where the prior art even suggests that the proposed combination would produce the Examiner's suggested results. Without such support from the prior art itself, the proposed combination is inappropriate, and should be withdrawn. See In re Lee, 277 F.3d 1338, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002).

Moreover, neither reference, alone or in combination, could achieve the actual advantages realized by the present invention. Because of the unique configuration of the present invention, where the end portion of the free layer is extended from and projected from the ferromagnetic tunnel junction element and also connected to high permeability shield layer that is spaced from the tunnel junction element, the present invention is advantageously capable of a greater reduction in the influence of the demagnetizing field in the free layer. The present invention is thus able to achieve a larger rotation angle of a magnetic direction in the junction region, thereby making it possible to obtain a magnetic

head having a sufficiently higher detection sensitivity than either of the cited prior art devices, alone or in combination. Accordingly, for at least these additional reasons as well, the Section 103 rejection is further traversed.

With respect to claim 15 in particular, however, Applicants once again respectfully traverse this rejection because Gill, and especially Noguchi, both fail to show anywhere where the free layer is bent away from the fixed layer in a region which is not opposed to the fixed layer. In fact, neither of the two cited references teaches or suggests any bend to the free layer. The Examiner has failed to respond to any of Applicants previous arguments specifically describing these deficiencies in the cited prior of record. Section 707.07(f) of the MPEP places the burden upon the Examiner, when the repeating a previous ground of rejection, to answer all of the meritorious arguments by Applicant specifically traversing the previous rejection. Because the Examiner has not met this burden with respect to claim 15, the rejection of claim 15 in particular should be immediately withdrawn for these additional reasons.

Claims 13, 16, and 18 again stand rejected under 35 U.S.C. 103(a) as being unpatentable over Gill in view of Fujishima et al. (JP 07073419). Applicants again respectfully traverse this rejection for at least the reasons discussed above. Clams 13, 16, and 18 all depend either directly or indirectly from independent claim 7. Fujishima has been cited only for teaching that the fixed layer is not exposed to the signal detection surface. Fujishima otherwise neither discloses nor suggests any of the spacing or projecting features

of the present invention discussed above. Accordingly, the Section 103 rejection of claims 13, 16, and 18 is respectfully traversed.

For all of the foregoing reasons, Applicants submit that this Application, including claims 1-9 and 11-18, is in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned attorney if an interview would expedite prosecution.

Respectfully submitted,

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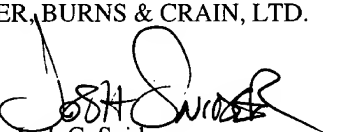
By 

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